NOT FOR PUBLICATION
5230

DOUGLAS-FIR BEETLE CONDITIONS

FOREST SERVICE REGION 4

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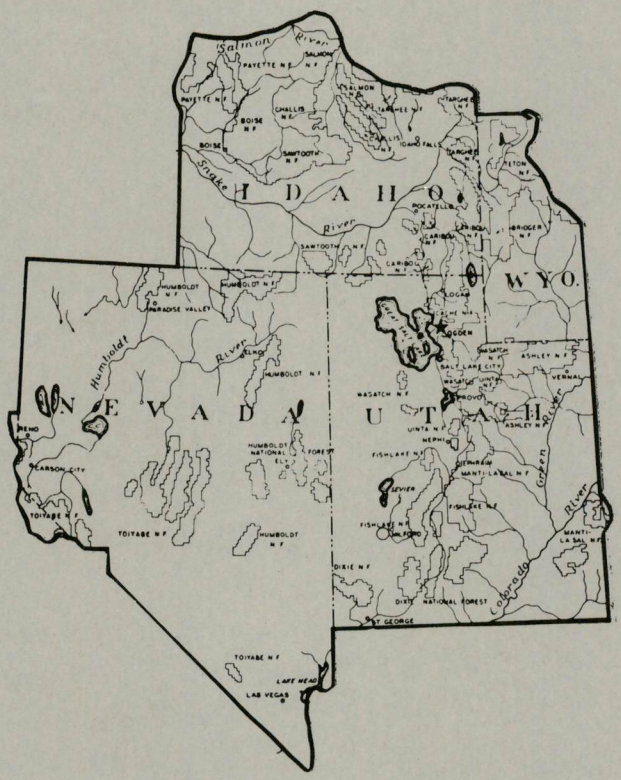

BRANCH OF FOREST INSECT AND DISEASE
PREVENTION AND CONTROL

DIVISION OF TIMBER MANAGEMENT

Forest Service
U. S. Department of Agriculture
Ogden, Utah

DOUGLAS-FIR BEETLE CONDITIONS
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INTRODUCTION

For several years the Douglas-fir beetle, (Dendroctonus pseudotsugae Hopk.), has been aggressively attacking and killing large volumes of Douglas-fir in Forest Service Region Four. Activity this year has been heaviest on the National Forests in southern Utah and southern Idaho.

The Douglas-fir beetle infestations in the Region vary considerably with regard to attack patterns and duration; for example, infestations on the Dixie have persisted over long periods and attacks more or less "blanket" large areas of Douglas-fir. The infestation on the Sublett Division of the Sawtooth National Forest in southern Idaho has also persisted for several years and the "blanket" attack pattern is noticeable there also.

Conversely, the western Wyoming and other southern Idaho infestations appear as distinct, well-defined attack centers with areas of uninfested type occurring between the attack centers. These grouped infestations have a tendency to be short-lived, usually building to epidemic status and declining within three to four years, with new and apparently unrelated infestations likely to appear in other spots.

During the 1962 aerial detection surveys, an intensive effort was made to map all active Douglas-fir beetle infestations as accurately as possible. Unfortunately, it was not possible to complete this type of mapping on all forests. The following discussions are based primarily on aerial observations and are intended to provide the land managers with information regarding current Douglas-fir beetle activity. To the extent available, maps showing the infestation centers will be provided for the forests concerned.

CURRENT CONDITIONS

Southern Idaho

Following is a listing of active Douglas-fir beetle infestations on the six southern Idaho National Forests:

Forest	Infestation Centers
Boise	133
Payette	98
*Sawtooth	45
Challis	23
Targhee	27
Salmon	21
Total	347

Infestations are classed as small, medium, and large in the following manner: small 0-15 trees, medium 16-30 trees, and large 30+ trees. There was a slight reduction in total number of infested groups on the Boise National Forest this year (140 in 1961 vs. 133 in 1962); however, there was a noticeable increase in number of large attack centers this year and some centers have 100 or more currently faded Douglas-fir trees.

As can be seen from the above table, the largest number of concentrations of Douglas-fir beetle activity in southern Idaho occur on the Boise Forest. The three heaviest areas are in the upper reaches and side drainages of the Deadwood River, the South Fork of the Payette River, and the North Fork of the Boise River.

The remaining infestation centers appear in a "shotgun" pattern; that is, generally scattered throughout the Boise National Forest. Also, it should be noted that most of the groups are found on steep slopes near ridge tops. In the past two years several new infestation centers have developed; others have died out. However, a comparison with last year's activity shows that buildup ratios have rarely exceeded one to one.

On the Payette National Forest infestations of Douglas-fir beetle generally follow the "shotgun" type pattern with widely scattered groups occurring throughout the Douglas-fir stands. These areas were mapped according to the small, medium, and large classifications previously mentioned. The largest group concentrations appear to be in the Poverty Flat-Camp Creek drainages where most groups exceed 100 trees in number. As with the Boise National Forest infestations, most of the attack centers are on steep slopes near the ridge tops. Buildup ratios in most cases do not exceed one to one, and at this time it appears that many of the infestations are leveling off. Of the 98 attack centers recorded this year 14 were classed as large (30 or more infested trees).

*Exclusive of the Sublett Division.

Attacks on the Sawtooth National Forest are moderate with one exception, the Sublett Division. In this area Douglas-fir beetle attacks have been increasing rapidly since 1956. To date about 6,000 MBM of Douglas-fir have been killed by the Douglas-fir beetle in this infestation. Last fall a 29,500 MBM sale was made on the Sublett Division covering 13,089 acres in order to utilize the resource, reduce the beetle population, and render the stand less susceptible to future bark beetle outbreaks. Cutting was started this spring and will, when possible, be directed to those areas where maximum beetle reduction can be obtained. In the infestations outside of the sale boundary most of the trees have been killed or are now infested. Timber from these areas will be sold to local ranchers.

Ground evaluations confirmed the fact that the Douglas-fir beetle is continuing its aggressive attack pattern throughout the Sublett Division. It is likely that this upward trend will continue for at least another year.

Dixie National Forest

Almost without exception all stands of Douglas-fir on the Dixie National Forest have had active infestations of the Douglas-fir beetle for a period of ten years or more. In a majority of the stands the infestations are still active. This fall the Dixie National Forest and the Regional Office, Division of Timber Management, initiated a comprehensive study to investigate and report on the management aspects of the Douglas-fir beetle situation on the forest. The report is expected to be ready for release early in 1963.

Biological evaluations of the Douglas-fir beetle on the Dixie National Forest this year were complicated by a rather abrupt change in the behavior pattern of the beetle. Early in the summer it was discovered that the beetles had not emerged and attacked in May and June as is normally the case. In mid-June the brood in trees attacked in 1961 were 56 percent larvae, 31 percent pupae, and 13 percent callow adults. By September brood development had progressed only to the extent where 26 percent were larvae, 43 percent were pupae, and 31 percent callow adults. Brood densities averaged 132 per square foot and the broods appeared still live and active in September. Infested trees faded early in 1962 and by late September many of these trees had lost most of their needles. In some infestation centers, notably those facing Bear Valley, the beetles flew and attacked new trees in September. However, in almost all other areas it appears likely that the beetle population will overwinter in the trees attacked in 1961. These changes in behavior pattern make it difficult to predict the future course of the outbreaks on the Dixie. Until evidence points to the contrary, we feel that the epidemic tendency of the Douglas-fir beetle will continue, at least in the majority of the infestation centers on the Dixie National Forest.

The effect of this persistent and long-lasting infestation on the resource is evident from a preliminary analysis of data collected which shows that in many areas less than 15 percent of the stems above 12-inch d.b.h. are still green. However, many green trees from 6- to 12-inch d.b.h. remain in most

areas. In several areas where nearly all of the trees over 12-inch d.b.h. have been killed, over 20 percent of the smaller trees are now infested. This heavy reduction in volume is evident throughout most of the Douglas-fir stands of the Dixie National Forest.

Several other forests in the Region have had above normal Douglas-fir beetle activity in the past few years. For the most part, however, attacks have not been explosive in nature and, in general, about the same number of trees have been attacked each year. Two exceptions to this are the Wyoming Division of the Bridger National Forest and some areas on the Manti-LaSal National Forest where increasing tendencies have been noted.

The heaviest concentrations of new activity on the Wyoming Division of the Bridger National Forest were found in the lower Greys River country and in several Star Valley drainages north of Salt River. Most of the groups in these areas show two or three newly faded trees for every old dead tree, and the groups range in size from 50 to 100 attacked trees. Other group infestations on the Wyoming Division of the Bridger appear to be static or declining.

Several active Douglas-fir beetle infestations were found on the Manti Division of the Manti-LaSal National Forest this year. The greatest concentrations of current faders were found on the north and east sides of the Manti Division. Some groups have upwards of 300 faders this fall, but these are the exception and not the rule. Some show definite declining tendencies while others show continuing activity; the increase and decrease ratios, however, appear to be about even and we feel populations have "plateaued" at least for the time being.

Infestations on other National Forests continue in varying degrees. Most of these attacks have built up to moderate levels of activity but show no significant increase in numbers of faded trees over what was observed last year. This "plateauing effect" was noted in infestations on the Targhee, Caribou, Cache, Uinta, and Fishlake National Forests. Douglas-fir stands on the Ashley and Wasatch Forests appear to be relatively free of Douglas-fir beetle activity.

DISCUSSION

Douglas-fir beetle populations throughout the Region continue at a relatively high level. This is true particularly of the Dixie National Forest in southern Utah and the Boise, Payette, and Sawtooth Forests in southern Idaho.

The large majority of Douglas-fir beetle infestation centers occur on steep, rocky terrain and are relatively inaccessible. In some areas the centers are small and widely scattered. Generally speaking, such centers are exerting pressure only on the patches of timber containing the infestation; on the other hand, the epidemics on the Dixie National Forest and Sublett Division of the Sawtooth National Forest have persisted to the point where widespread and serious volume reductions have resulted. Such heavy losses are causing increasing concern. In view of this, concentrated effort has been made to accurately map and classify observable attack centers during aerial surveys.

Biological evaluations have been increased also in order to present land managers with a more comprehensive picture of their Douglas-fir beetle problems. However, due to the widespread nature of current Douglas-fir beetle infestations, it is physically impossible to ground check all infestation centers. Thus, it has been necessary to work on a priority basis with the larger, more accessible infestation centers receiving the most attention.